Technical Support, Partnership Brokering and Demonstration Venues for EM Technologies

Developer: Energy and Environmental Research Center, University of North Dakota
Contract Number: DE-FC21-94MC31388
Crosscutting Area: N/A

Technical Integration

Problem:

The U.S. Department of Energy (DOE) Environmental Management (EM) Program is committed to the commercialization of innovative technologies to expedite the effective and efficient cleanup of nuclear defense sites. Commercialization barriers include limited access to necessary technical expertise, access to testing and demonstration capabilities, including field sites, and a limited knowledge of EM complex needs. Legal or regulatory constraints also present barriers, particularly in the case of field activities.

Solution:

The Energy & Environmental Research Center (EERC), a nonprofit research, development, demonstration, and commercialization (RDD&C) facility, works to expedite commercialization, particularly for the small business technologist, through customized programs of focused technical support, partnership brokering, systems engineering and analysis, and field demonstration. The EERC activities are largely supported by a Cooperative Agreement with the Federal Energy Technology Center (FETC).

Figure 1: Matrix of EERC Core Expertise, EM Focus Areas, and FY 98 FETC-EERC EM Cooperative Agreement Technology Tasks

EERC Core Expertise	EM Focus Areas 1	2	3	4
Extraction/Analysis	■	■	▨	■
Cementation	▨	▨	▨	▨
Vitrification	▨	▨	▨	▨
Leaching Assessment	▨	■	▨	▨
Catalysis	▨	▨	▨	▨
Thermal Conversions (liquefaction, pyrolysis, FBC)	▨	■	▨	▨
Plasma	▨	▨	▨	▨
Biotreatment	■	▨	▨	▨
Carbon Sorbents	▨	▨	▨	▨
Separations	▨	■	■	▨
Sensors	■	▨	▨	■
Systems Analysis	■	■	■	■

1 Subsurface Contaminants
2 Mixed Waste
3 Tanks
4 Decontamination and Decommissioning

■ Current Activities
▨ Potential Activities

EERC DD15526.CDR

The EERC EM Cooperative Agreement, currently in its third year, provides the potential for technologists to readily benefit from the EERC's broad range of technical expertise, testing and demonstration facilities, growing family of government and commercial partnerships, and access to real-world demonstration sites.

Confidentiality, a key to maintaining a competitive edge, is ensured through practical and proven confidentiality agreements.

Currently, seven innovative technologies are benefiting from the expedited RDD&C made possible by the EERC efforts under the Cooperative Agreement.

As shown in Figure 1, EERC commercialization activities address technologies destined for the mixed waste, tank waste, subsurface contaminants and decontamination and decommissioning areas. The current match of EERC core expertise to EM needs is particularly strong in the areas of extraction and analysis, thermal conversions, separations, sensors, and systems analysis.

Of the eight current program activities profiled in Table 1, two are

already on EM sites (GTS Duratek and SpinTek). Of the remaining technologies, two are commercial, two are in the initial R&D stage and two are in the advanced stages of testing and demonstration.

In addition to Cooperative Agreement activities, the EERC regularly teams with industry partners to pursue competitive awards and build the joint ventures needed to expedite RDD&C activities and shorten commercialization time lines.

Benefits:

The EERC approach moves technologies to the marketplace by efficient resolution of:

- Technical barriers through focused application of technical expertise and the testing capabilities housed in the state-of-the-art EERC facilities.

- Capitalization and marketing barriers through government and private sector partnerships and focused marketing support.
- Proof-of-performance barriers through access to a wide range of field demonstration sites and test beds, and through the design and implementation of field performance evaluations.

Technology:

Ongoing activities include 1) identifying near-commercial candidate technologies with needs matching the EERC core capabilities in Figure 1, 2) determining sources of development and demonstration support, and 3) cultivating private sector partnerships for technology commercialization.

Contacts:

DOE FETC supports technology development for nuclear defense complex site cleanup through a cooperative agreement with the DOE Environmental Management Office of Science and Technology (EM-50). For information on this project, the contractor contact is:

Principal Investigator:
Mr. Thomas A. Erickson
Energy and Environmental Research Center, University of North Dakota
15 North 23rd Street
Grand Forks, ND 58203
Phone: (701) 777-5153
Fax: (701) 777-5181
E-mail: terickson@eerc.und.nodak.

DOE's Federal Energy Technology Center supports the Environmental Management - Office of Science and Technology by contracting the research and development of new technologies for waste site characterization and cleanup. For information regarding this project, the DOE contact is:

DOE Project Manager:
Mr. Edgar Klunder
Federal Energy Technology Center
626 Cochrans Mill Road
P.O. Box 10940
Pittsburgh, PA 15236-0940
Phone: (412) 892-4678
Fax: (412) 892-4604
E-mail: klunder@fetc.doe.gov

TABLE 1. FY 98 Technology Commercialization Activities under the FETC–EERC Cooperative Agreement

Technology Description	Commercial Partner	EERC Activity
Centrifugal Membrane Filtration	SpinTek Membrane Systems Inc.	Process Optimization and Design
Laser Ablation for Removal of Paint and Surface Coating	F2 Associates	Cost and Performance Analyses
Fiber-Optic Cone Penetrometer System for Subsurface Heavy Metals Detection	Science & Engineering Associates	Sensor Calibration, Validation, and Demonstration
Subcritical Water Technology for the Remidiation of Organically Contaminated Soils	To Be Determined	Process Development and Pilot-Scale Demonstration
Acoustic Energy and Humic Acids to Mobilize DNALPs in Subsurface	Weiss Associates	Bench- and Pilot-Scale Testing of Process Enhancement
Mercury Decontamination of Soils	Mercury Recovery Services	Sorbent Enhancements and Analysis
Steam Reformer Treatment Technology	Thermochem, Inc.	Sample Analysis and Viscosity Measurements
High-Temperature Waste Treatment System	GTS Duratek	Process Optimization